

CLAIMS

What is claimed is:

1. A method of measuring a flying height comprising:
rotating a disk having at least one protrusion protruding higher than a minimum flying height of a head assembly, wherein a slider of the head assembly is subject to measurement of a flying height with respect to the disk;
cutting an upper end portion of the protrusion by the slider according to the rotation of the disk; and
measuring a height of the cut protrusion using a measurement apparatus.
2. The method as claimed in claim 1, wherein the head assembly is a magnetic head assembly and the disk is a magnetic recording disk.
3. The method as claimed in claim 2, wherein the measurement apparatus is an atomic force microscopy (AFM).
4. The method as claimed in claim 2, wherein the protrusion is formed by generation of asperities due to migration of a substance of a base layer of the disk.
5. The method as claimed in claim 4, wherein the measurement apparatus is an AFM.
6. The method as claimed in claim 1, wherein the measurement apparatus is an AFM.
7. A system of measuring a flying height comprising:
a head assembly subject to measurement of a flying height;

a disk having at least one protrusion protruding higher than a minimum flying height of the head assembly and floating a slider of the head assembly by rotation of the disk so that an upper portion of the protrusion protruding higher than a flying height of the slider is cut by the slider; and

a measurement apparatus to measure a height of the protrusion cut by the slider of the head assembly floated according to the rotation of the disk.

8. The system as claimed in claim 7, wherein the head assembly is a magnetic head assembly and the disk is a magnetic recording disk.

9. The system as claimed in claim 8, wherein the measurement apparatus is an AFM.

10. The system as claimed in claim 8, wherein the protrusion is formed by generation of asperities due to migration of a substance of a base layer of the disk.

11. The system as claimed in claim 10, wherein the measurement apparatus is an AFM.

12. The system as claimed in claim 7, wherein the measurement apparatus is an AFM.

13. A method of determining the flying height of a slider of a head assembly comprising:

forming a protrusion having a height greater than a flying height of a slider of a head assembly on a surface of a disk;

cutting the protrusion on the surface of the disk with the slider of the head assembly during rotation of the disk to leave a cut protrusion on the surface of the disk; and

determining an actual flying height of the slider of the head assembly based on the cut protrusion.

14. The method of claim 13, further comprising estimating the flying height of the slider of the magnetic head assembly prior to forming the protrusion on the surface of the disk.

15. The method of claim 13, wherein the determining of the actual flying height comprises measuring the cut protrusion with an AFM.

16. The method of claim 13, wherein the forming of the protrusion comprises migrating a product to the surface of the disk from a base layer of the disk through a pinhole to form a corrosion product.

17. The method of claim 16, wherein the determining of the actual flying height comprises measuring the cut protrusion with a scanning probe microscopy.

18. The method of claim 13, further comprising:
installing the disk having protrusions formed on the surface in a hard disk drive having the slider of the head assembly; and
removing the disk from the hard disk drive after the cutting of the protrusion and prior to the determining of the actual flying height of the slider.

19. The method of claim 18, wherein the hard disk drive includes a plurality of disks having protrusions formed on the surface and a plurality of sliders corresponding to the plurality of disks.

20. A head flying height measurement apparatus comprising:
a disk having a plurality of protrusions with a height greater than an estimated flying height of a slider formed on a surface of the disk;
a head assembly of a disk drive having a magnetic head and a slider disposed at an end of the head assembly, wherein the slider floats above the disk when the disk is rotated and cuts the protrusions to leave a portion of each protrusion below a bottom edge of the slider on the surface of the disk; and

a measurement device, wherein the measurement device measures a height of the portion of the protrusions remaining on the surface of the disk that corresponds to a flying height of the slider.

21. The apparatus of claim 20, wherein the measurement device comprises an AFM.

22. The apparatus of claim 21, further comprising forming the protrusions on the surface of the disk by migrating a product to the surface of the disk from a base layer of the disk through a plurality of pinholes to form a corrosion product.